

### **AMENDMENTS TO DRAWINGS**

The Examiner objected to the drawings under 37 CFR 1.83(a). "Replacement Sheets" of the drawings are being submitted herewith in compliance with 37 CFR 1.83(a) overcoming objections cited. No new matter has been added as a result of the amendments to the drawings.

### **REMARKS**

Claims 1-56 are currently pending in the application. Claims 1, 15, 19, 30, 40, 45, 46, and 51 are independent claims.

The Examiner objected to the drawings failing to show every feature of the invention specified in the claims. Corrected drawings are filed herewith in compliance with 37 CFR 1.121(d). No new matter has been added as a result of the amendments to the drawings. The Drawings have been amended, wherein Figure 5 has been modified to also include the possibility of the pull-up being an N-channel transistor. No new matter has been added as a result of this amendment since the Specification clearly recites that the P-channel transistor 410 may be pulled up to a supply voltage, and alternatively, an N-channel pull-up may be implemented. *See* Specification, page 12, line 25 – page 13, line 2. This is further supported by the originally filed claims 5 and 6, which respectively call for a P-channel transistor and an N-channel transistor. Therefore, the addition in Figure 5 of the option of the pull-up resistor for transistor 410 being an N-channel transistor is fully supported by the Specification as originally filed. As a result of this amendment to the drawing, no new matter has been added. Therefore, claim 6 is fully supported by the Specification and the drawings (as amended) and all features called for by claim 6 are supported by the drawings. Therefore, Applicant respectfully requests that the objections to the drawings be withdrawn and that all Figures be accepted.

The Examiner rejected claims 46-50 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. Applicant respectfully traverses this rejection.

The Examiner suggested that claims 46-50 are not enabled because, allegedly, the Specification does not provide details of instruction code and how the code is executed to

perform the methods in claim 46-50. Applicant respectfully disagrees. Independent claim 46 calls for a computer readable program device that when encoded by instruction and executed by a computer, performs a method of detecting a change in the leakage current and adjusting a refresh rate based upon the change in leakage current. These are steps that are clearly supported by the Specification. Further, the Specification describes that the access device 220 of Figure 1, is a computer unit. Controllers, computers, etc., are clearly disclosed by the Specification. *See* Specification, page 11, line 21- page 12, line 6. Upon a reading of the present disclosure, those skilled in the art would readily be able to implement instruction code based upon a description using the computers and/or controllers described in the present application. Therefore, those skilled in the art, when reading the present disclosure, would have sufficient knowledge to implement instruction codes and execute the instruction code to perform the methods described in the present invention. Therefore, claims 46-50 do, indeed, comply with the enable requirement under 35 U.S.C. 112, first paragraph. It is not true that actual instruction code need to be disclosed for those skilled in the art having benefit of the present disclosure to be able to implement the instruction code described in the present invention.

Further, Figure 7 of the Specification clearly describes a flowchart that may be used by those skilled in the art to implement the instruction code called for by claims 46-50 of the present invention. *See* Figure 7; Specification, page 18, line 20 – page 19, line 17. Therefore, there is sufficient disclosure in the Specification to enable claims 46-50 of the present invention and therefore, claims 46-50 are in compliance with 35 U.S.C. 112, first paragraph. Therefore, claims 46-50 of the present invention are allowable.

The Examiner rejected claims 1-56 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,154,408 (*Yuh*). Applicant respectfully traverses this rejection.

Applicant respectfully asserts that the Examiner has misinterpreted the disclosure of *Yuh* when reading the prior art upon claims of the present invention. Claim 1, for example, calls for a circuit for performing an approximation of a current leakage. *Yuh* does not disclose any structure or method for approximating any type of a current leakage. Further, claim 1 also calls for a refresh rate control unit to adjust a refresh rate associated with a portion of a device in response to the approximation of the leakage current. *Yuh* does not disclose adjusting the refresh rate. Further, *Yuh* does not disclose any type of a refresh rate control based upon any type of an approximation of current leakage. *Yuh* is directed to sensing a voltage potential and generating a right operation control signal performed by a self-refresh isolator.

The Examiner mistook the self-refresh oscillator in *Yuh* that detects a voltage signal and performs a write operation during the refresh cycle. *Yuh* discloses that the self-refresh oscillator includes a control signal generator that senses a variation of a signal inputted into a comparator. See column 2, lines 62-64. The control signal generator 14 of *Yuh* also generates a write operation that has a predetermined pulse width to enable an operation when a self-refresh mode starts. See column 2, lines 64-67. This is performed to control a waveform of an output signal by controlling a pulse width of the output signal and varying a refresh period, and *not* the refresh rate, as called for by claims of the present invention. See column 3, lines 10-15.

The Examiner mistakes the cell-emulation unit 21 of *Yuh* to be a current leakage model circuit. The cell emulation unit simply senses cell data loss that may result from leakage current, but does not detect or approximate leakage current. See column 3, lines 22-28. Specifically, the emulation unit is described to detect the voltage level. See column 3, lines 29-39. Therefore, *Yuh* is directed to enabling the write operation when a self-refresh mode starts. It does not adjust the refresh rate.

The output signal (of the cell emulation unit) disclosed by *Yuh* is related to varying the refresh period but not the refresh rate. Further, there is no disclosure in *Yuh* that suggests or discloses approximating the current leakage. In contrast to *Yuh*, claims of the present invention are directed to approximate current leakage and adjust a refresh rate in response to the approximation of the current leakage. *Yuh* makes no correlation between any type of a refresh rate and an approximation of a current leakage. Simply disclosing that sensing a cell data loss is detected wherein the cell data loss may result from current leakage does not equate to approximating the current leakage. Claims of the present invention are directed to approximating the current leakage and then adjusting a refresh rate, which is clearly not anticipated or suggested by *Yuh*. Therefore, claim 1 of the present invention is not taught, disclosed, or suggested by *Yuh*. Accordingly, claim 1 of the present invention is allowable for at least the reasons cited herein.

Independent claim 15 calls for a cell leakage model to model a current leakage and a refresh control isolator to control the refresh rate and a delay unit for controlling the refresh rate. Clearly, as described above, nothing in *Yuh* discloses modeling a current leakage and adjusting a refresh rate. Therefore, claim 15 of the present invention is allowable for at least the reasons cited herein.

Further, claim 19 calls for a system board that includes a memory device, which includes a leakage model circuit for approximating a current leakage and a refresh rate control unit for adjusting the refresh rate based upon the approximation of the current leakage, which are elements not taught, disclosed, or suggested by *Yuh* for at least the reasons cited above. Therefore, claim 19 of the present invention is allowable for at least the reasons cited herein.

Further, claim 30 calls for a memory device that comprises a leakage model circuit for approximating a current leakage and a refresh rate control unit for adjusting the refresh rate based upon the approximation of the current leakage, which are elements not taught, disclosed, or suggested by *Yuh* for at least the reasons cited above. Therefore, claim 30 of the present invention is allowable for at least the reasons cited herein.

Claim 40 calls for a method for detecting a change in a current leakage and adjusting the refresh rate based upon the current leakage, which as described above, is not taught, disclosed, or suggested by *Yuh*. Therefore, claim 40 of the present invention is also allowable.

Further, claim 45 calls for a means for detecting a current leakage and means for adjusting the refresh rate based upon the current leakage which, as described above, are not elements that are taught, disclosed, or suggested by *Yuh*. Therefore, claim 45 of the present invention is allowable.

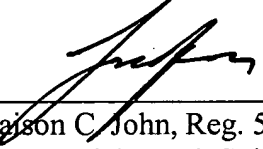
Additionally, claim 46 calls for a computer readable program device that, when executed by a computer, performs a method that includes detecting a change in the leakage current and adjusting the refresh rate, which, as described above, are elements not taught, disclosed, or suggested by *Yuh*. Therefore, claim 46 of the present invention is also allowable.

Independent claims 1, 15, 19, 30, 40, 45, and 46 are not taught, disclosed, or suggested by the prior art for at least the reasons cited herein. Additionally, dependent claims 2-14, 16-19, 31-39, 41-44, and 46-56, which respectively depend from claims 1, 15, 19, 30, 40, and 46, are also allowable for at least the reasons cited herein.

Reconsideration of the present application is respectfully requested.

In light of the arguments presented above, Applicant respectfully asserts that claims 1-56 are allowable. In light of the arguments presented above, a Notice of Allowance is respectfully solicited.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Houston, Texas telephone number (713) 934-4069 to discuss the steps necessary for placing the application in condition for allowance.

<p>Date: <u>June 2, 2006</u></p>	<p>Respectfully submitted,</p> <p>WILLIAMS, MORGAN &amp; AMERSON, P.C. CUSTOMER NO. 23720</p> <p>By: </p> <p>Jason C. John, Reg. 50,737 10333 Richmond, Suite 1100 Houston, Texas 77042 (713) 934-4069 (713) 934-7011 (facsimile) ATTORNEY FOR APPLICANT(S)</p>
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